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INTERNATIONAL AIRWAYS VOLCANO WATCH OPERATIONS GROUP (IAVWOPSG)

FIFTH MEETING

Lima, Peru, 15-19 March 2010

Agenda Item 5: Operation of the IAVW
5.1 Implementation of the IAVW, including the IAVW management reports

COSTS OF ASH AVOIDANCE TO U.S. AIR CARRIERS DURING THE ERUPTIONS OF REDOUBT AND SARYCHEV VOLCANOES IN 2009

(Presented by the United States)

SUMMARY

The costs to U.S. Air Carriers due to eruptions in 2009 of two volcanoes in the North Pacific region are summarized in this paper: Redoubt in Alaska, USA, and Sarychev in the Kurile Islands, Russia. The costs represented in this paper reflect average sterilized costs from the six major United States Air Carriers with International Operations in the North Pacific and the state of Alaska, USA.

1. INTRODUCTION

1.1 Ash clouds from volcanic eruptions continue to pose serious hazards and costs to aviation. The March-April 2009 eruption of Redoubt volcano in Alaska, USA, and the June 2009 eruption of Sarychev volcano in the Kurile Islands, Russia, posed many Safety of Flight concerns, aerodrome impact, multiple enroute tactical re-planning, and strategic operations planning for the Air Carrier Operations Centers (AOC's). These impacts resulted in tactical re-routing of aircraft, enroute diversions, air turn backs, strategic re-routes, planned fuel stops and flight cancellations.

2. DISCUSSION

2.1 Six U.S. Air Carriers provided information about impacts to their respective operations, and the average related costs were separated by seven categories: tactical re-routing of aircraft, enroute

diversions, air turn backs, strategic re-routes, planned fuel stops, flight cancellations, and additional aircraft maintenance costs.

2.2 Re-route costs, to avoid known and forecast volcanic ash, were identified by noting the cost of the additional fuel uploaded. Diversions costs are an average based on aircraft type, airport costs, fuel uploaded and passenger protection (i.e. food and possible hotel accommodations); diversion costs vary from 10's of thousands of dollars to upwards of 100's of thousands of dollars.

2.3 Air turn backs occurred over several days, and although there were few, they are costly in time, fuel usage, crew time, and passenger re-accommodation on later flights that may not operate for several hours or days. In addition, the domino affect of the air turn back has residual cost due to aircraft and crews being out of position for the next leg of scheduled operations.

2.4 Fuel stops resulted because new operating routes to avoid the known and forecast volcanic ash were beyond the range of the aircraft. The many variables resulted from segment length, available routes, coordination with Air Traffic Controls of different countries, and what additional traffic could be accommodated due to the heavier volumes of traffic now planned through that countries airspace, due to closure of the primary routes.

2.5 Cancellations result in cost to air carriers differently in as much as recovery flights or movement of passengers will usually occur the next day. The consequence is certainly an inconvenience to the passengers but no fuel was expended and the aircraft may be utilized for another flight if that aircraft is at a hub city for that carrier. If cancellations occur over several days, these costs would differ in that passengers may choose not to fly to the destination and those revenues will be refunded.

2.6 Only one carrier reported that a precautionary check on one aircraft was completed. An average generic cost was identified for aircraft inspections, engine overhaul and engine change for the purpose of this paper.

2.7 Impacts and Costs of the Redoubt Eruption, 15 March-4 April 2009: Between 22 March 2009 and 05 April 2009, the eruption and the ash cloud resulted in approximately 60 re-routes, 20 diversions, 10 turn backs with many night operations cancelled into the Anchorage, Alaska, USA. The additional costs to the air carriers from the Redoubt eruption and resulting ash cloud were conservatively $400,000. (This does not include costs related to the closure of Anchorage International Airport and resulting disruptions to express parcel air carriers).

2.8 Impacts and Costs of the Sarychev Eruption, 12-15 June 2009: Between 12 June 2009 and 15 June 2009, the eruption and the ash cloud resulted in 65 re-routes, 6 diversions, 2 turn backs to originating departure cities, and 12 fuel stops. The additional costs to the air carriers from the Sarychev eruption and resulting ash cloud were approximately $1.8M.

2.9 Average Costs: The additional cost for an aircraft inspection is $30,000, a complete engine overhaul $3M, and an engine replacement $10M. In addition, an example of a B-757 aircraft that is out of service for three days due to a maintenance inspection would on average operate five segments each day with 182-seat capacity at an average cost per seat of $300 (conservative figure) would generate $273,000/day with the total possible revenue of $819,000 for those 3 days. An inadvertent encounter of Volcanic Ash could result in costs to an air carrier from $30,000 to upward of $10M for one engine replacement.

3 CONCLUSION

3.1 The air carriers consider volcanic eruptions a safety priority, and the tactical and strategic practices of ash avoidance did come at a combined cost of $2.2M for Redoubt and Sarychev 2009). However, an inadvertent encounter could cost approximately $3M for one engine overhaul and could be as much as the $80M (~$140M in today's dollars) that were incurred with the KLM flight in 1989, Anchorage, Alaska, USA. Noting that Redoubt and Sarychev affected the six air carriers for 18 days in 2009, the cost of $2.2M is considerably less costly than just one inadvertent encounter.

3.2 The Airline Operations Centers and Air Traffic Control Centers rely on the Volcanic Observatories and Volcanic Ash Advisory Centers to provide the most current information for better tactical adjustments and strategic planning. The costs will be reduced as more timely and continued refinement of the information is provided from the scientific community. Volcanic ash is recognized as, a Safety of Flight Hazard priority and the costs of this phenomenon, as with weather impacts to the Air Carriers, are understood and accepted.

4. ACTION BY THE MEETING

4.1 The meeting is invited to note the information in this paper.

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